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AD NUMBER
AD839364
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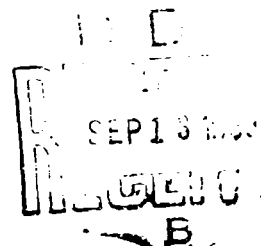
TRANSLATION NO. 1219

DATE: 27 Jan 1964

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DEPARTMENT OF THE ARMY  
Fort Detrick  
Frederick, Maryland

**PEMPHIGUS BETAE DOANE - NEW SUGAR BEET PEST IN POLAND**

Following is a translation of an article by Czeslaw Wiszniewski M. Eng. in the Polish-language publication Gazeta Cukrownicza (Sugar Industry Gazette), No 5, 1964, page 129.

In 1963, in Poland, on sugar, fodder and pickle beets there occurred a new, heretofore unknown, pest - a little fly attacking the roots, the Pemphigus betae Doane. This pest was found by me in July, 1963 in the phenological garden of the ZAS (the Agro-technical Raw Materials Team) in Szczecin.

My attention was attracted to foci of wilted beets, which gave the impression that the beets were diseased by nematoids. Further investigations revealed that the reason for this phenomenon was a heretofore unknown fly. In this garden this pest has attacked all the beets and even the new plants.

This pest attacks the smallest roots and its occurrence is characterized by a grey-white waxy secretion film which covers the soil, the roots and the whole environment of the pest colony.

Subsequently I began observations of the industrial plantations in the neighborhood of C. Szczecin. My search was appreciably facilitated by the fact that this pest also occurred on the roots of the weed family (Chenopodiaceae), which could be gathered without causing any damage. Having established the existence of the pests on the roots of the weeds, I could accede to looking for them on the beets, not having to gather a large amount of them. In the region of C. Szczecin (Sugar Refinery Szczecin) I found the pest in the radius of ten km from the works. During harvest, the performed calculations established that the plants were attacked to the extent of 27.32 and 41.00% (average 33%) (to perform this calculation I chose at random in various parts of the plants rows of beets, counted off twenty-five beets and determined in their number how many were attacked

by observing the presence of the pest or a white film on the roots). During autumn, the percentage of plants attacked and the concentration of the pest had appreciably decreased, as compared with the concentration in July and August when it reached almost 100%.

This pest I also found in the region of the Sugar Works Kluczewo, near Stargard Szczecinski, in a radius of about five km from the factory, and in the Sugar Works Nowy Staw near Malbork. Subsequently the pest was found also in the region of the Sugar Works Kruszwica (ZAS Kruszwica), in the region of the Sugar Works Michalow near Blonie and in the micro-fields of the IPC (the Institute of the Sugar Industry) in Warsaw.

An interesting fact was established in the three tested cases: the Sugar Works Szczecin, Kluczewo and Nowy Staw. The pest existed on rubbish heaps which remained after the freight cars had been emptied and in beet storage. The weeds of the families: Chenopodiaceae, Chenopodium album, Atriplex patulum, Atriplex nitens, as well as the remaining beet roots which together with the soil remained there and after a winter grew again, were very strongly attacked by the pest. This would point to the fact that the possibility of transfer of the pest - the parthenogenetic females - with the soil and beets. This fact may explain the strong extent to which the plantations in the neighborhood of the works had been attacked, being the afterconsequence of the pest concentration from the plantation regions. This pest occurred not only on beets but also on potatoes, vegetables and weeds of the Chenopodia family. Other plants were not attacked.

Until 1963, this pest was not noticed in Poland. Its mass occurrence is probably due to high summer temperatures. Its mass occurrence in various parts of Poland in 1963 point to the fact that this pest must have also occurred in previous years, but because of its hidden habitat, his discovery, unless specifically looked for, was difficult.

The above described pest was classified as the species Pemphigus betae Donae by Dr. Maria Kubacka, which was subsequently confirmed by the German aphidologist from Rostock, Prof. F. P. Muller. This species is also known under other names. In 1857 it was described by Koch as Pemphigus fuscicornis, and under this name is to be found in P. Soraue.

This pest was brought to Europe from America and already in 1857, Koch found it in Franconia and described it. In 1933 the pest occurred in Germany where U. Sedlag studied it and concluded that it was a carrier of the mosaic virus.

Strong occurrences of the virus mosaic occurred also on all the types of beets in the phenological garden. However at the moment it is difficult to ascertain whether it was transferred by the Pemphigus betae.

In all cases the pest colonies are accompanied by larvae of the fly Chloropisa glabra of the Chloropidae family. I found that the larvae of this fly are savage and feed on the pest. This fact was also established

by Parker [17]. Judging by the happenings of 1963, we believe that the larvae of the *Chloropisca* fly will be able to reduce the pest population.

As the *Pemphigus betae* is an entirely new occurrence in Poland, I undertook to study its biology, ecology and danger to the bees and the methods to exterminate it.

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